{In Archive} Re: tracking COCs

richard abitz to: Ray Leissner 01/29/2012 08:13 AM

Cc: Philip Dellinger, Stacey Dwyer, Jose Torres, Scott Ellinger, David Gillespie

From: richard abitz <richabitz@gmail.com>

To: Ray Leissner/R6/USEPA/US@EPA

Cc: Philip Dellinger/R6/USEPA/US@EPA, Stacey Dwyer/R6/USEPA/US@EPA, Jose Torres/R6/USEPA/US@EPA, Scott Ellinger/R6/USEPA/US@EPA, David Gillespie/R6/USEPA/US@EPA

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2 attachments

Rosita Stability Analysis PA1.pdf Rosita Stability Analysis PA2.pdf

Ray:
I concur with the selection of Mn, U, Ra-226 and would recommend Se and SO4 be added to your list. The basis for the selection of Se and SO4 is that they are both anion species that will show little to no retardation during transport and they both exceed the RT and MCL values in the lixiviant (see attached files). With time, the avg stabilization values will increase toward the lixiviant values, as the stabilization is a transient geochemical condition that reflects aggressive pump and treat of preferential flow pathways. As you know, one of the big problems is a lack of continued monitoring after stabilization is achieved, and there is no scientific evidence to show that the Rosarita stabilization values represent the present contaminant concentrations in the former production areas. Conceptually, it is reasonable to hypothesize that a large mass of contamination is held in the low permeability regions of the disturbed ore zone, and this will continue to bleed into the preferential flow paths after stabilization of the high permeability regions of the aquifer.
I'd be happy to talk further with you and others on a conference call.
Regards,
Rich

On Tue, Jan 24, 2012 at 4:56 PM, Ray Leissner <Leissner.Ray@epamail.epa.gov> wrote:

Richard,

As per our conversation today attached is a table I constructed from two reports conveying the final results of restoration efforts in 2 PAAs in the Goliad aquifer near Rosita, Texas, about 100 miles south of Goliad, Texas. This we believe may be indicative of what can be expected at Goliad, if the mining were to occur. As I said, the purpose of the chemical fate - transport model is to predict the contaminant concentrations of the restored plume at the exempt/nonexempt boundary after restoration and migration. We have no agreement with UEC to conduct the modeling yet, but in anticipation of that occurring we are considering what contaminants of concern we wish to model for. We recognize that this exercise sets new standards if it happens. Having it happen is dependent on the acquiescence of UEC to conduct the modeling. Therefore we wish to negate any claims of unreasonable burden by limiting our chemfate modeling to track five contaminants. I would like to discuss with you our approach for COC selection if possible. Please give me a call when you are ready to discuss. There may be others here that would like to participate in the discussion. If so, I'll set up a conference call. I expect to be out of the office on Friday.

Submitted only to advance the discussion on Goliad that we wish to have with you, please do not distribute the attached table further. Thank you.

Ray Leissner, Env. Eng.
Ground Water / UIC Section (6WQ-SG)
(214) 665 - 7183
USEPA, Region 6

The FIRST STEP in protecting your ground water is to have your well tested.

URI Rosita ISR Project - Groundwater Restoration Stability Summary Report
Production Area Authorization UR02880-011
All BL Wells

Parameter	Units	EPA Primary MCL	EPA Secondary MCL	PA BL Well Low	PA BL Well High	PA Restoration Table	Lixiviant 5-15-1992	Stability Sample 1 Dec. 2008	Stability Sample 2 May 2009	Stability Sample 3 Aug. 2009	Stability Average	CODE
Calcium	mg/l			116	205	155	826	112	134	129	125	
Magnesium	mg/l			32	76	53	177	22	27	28	26	
Sodium	mg/l			353	502	422	668	193	205	212	203	
Potassium	mg/l			17	42	26	42	17	18	19	18	
Carbonate	mg/l			0	8	0	0	0	0	0	0	
Bicarbonate	mg/l			10	278	204	504	204	167	201	191	
Sulfate	mg/l		250	122	318	196	1,730	153	211	233	199	
Chloride	mg/l		250	705	1,037	866	1,513	356	373	381	370	
Nitrate	mg/l	10		0.53	1.30	1.79	0.67	0.13	0.64	0.65	0.47	
Fluoride *	mg/l	4	2	<.01	5.50	0.81	0.67	0.66	0.80	0.73	0.73	
Silica	mg/l			23	67	50	31	24	23	25	24	
TDS (180 c)	mg/l		500	1,590	2,310	1,933	5,450	998	1,231	1,193	1,141	
EC (25 c)	µmho			2,950	3,990	3,388	6,900	1,596	1,876	1,890	1,788	
ALK as CaCO3	mg/l			26	228	169	413	167	140	165	157	
pH			6.5-8.5	7.52	9.15		7.45	7.49	7.33	7.46	7.43	
Arsenic *	mg/l	0.01		<.001	0.059	0.009	0.007	0.005	0.006	0.004	0.005	
Cadmium *	mg/l	0.005		0.0001	0.0015	0.0005	0.0007	0.0020	0.0020	0.0020	0.0020	
Iron	mg/l		0.3	0.010	0.480	0.105	0.510	0.018	0.013	0.010	0.014	
Lead *	mg/l	0.015		<.001	0.008	0.002	<0.001	0.004	0.004	0.004	0.004	
Manganese	mg/l		0.05	<.01	0.47	0.06	0.67	0.10	0.11	0.11	0.11	
Mercury	mg/l	0.002		<.0001	0.0020	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001	
Molybdenum	mg/l		1.0	<.01	0.17	0.05	0.20	0.25	0.24	0.18	0.23	
Selenium *	mg/l	0.05		<.001	0.430	0.008	0.160	0.033	0.032	0.034	0.033	
Uranium	µg/l	0.03		0.000	11.900	0.350	17.400	0.576	0.637	0.639	0.617	
Ammonia-N *	mg/l			0.10	1.10	0.38	0.05	0.13		0.18	0.15	
Radium 226	pCi/l	5.0		0.4	595.0	183.0	196.0	89.1	90.1	81.3	86.9	

COLOR CODE EXPLANATION	
	Below RT
	Below MCL
	No Standard
	Above RT & MCL

* For these parameters, today's TCEQ required NELAC accredited and certified analytical methods result in greated concentration LLD's than the historic baseline analytical method provided for. Rather than use zero (0) in the calculations, the LLD values were used as the default measured value in both the baseline and restoration stability statistical calculations, resulting in a post restoration stability averages that are greater than baseline simply because the LLD is a greater concentration.

URI Rosita ISR Project - Groundwater Restoration Stability Summary Report
Production Area Authorization UR02880-021
All BL Wells

Parameter	Units	EPA Primary MCL	EPA Secondary MCL	PA BL Well Low	PA BL Well High	PA Restoration Table	Lixiviant 5-15-1992	Stability Sample 1 Dec. 2008	Stability Sample 2 May 2009	Stability Sample 3 Aug. 2009	Stability Average	CODE
Calcium	mg/l			68	239	170	725	173	177	170	173	
Magnesium	mg/l			21	88	62	175	48	50	51	50	
Sodium	mg/l			285	638	420	515	285	268	297	283	
Potassium	mg/l			17	65	28	40	22	21	23	22	
Carbonate	mg/l			0	1		0	0	0	0	0	
Bicarbonate	mg/l			27	279	216	434	242	245	226	238	
Sulfate	mg/l		250	62	533	248	1,370	235	225	221	227	
Chloride	mg/l		250	663	1,032	870	1,290	606	633	631	623	
Nitrate	mg/l	10		0.50	1.40	1.30	0.22	1.22	1.38	0.96	1.19	
Fluoride *	mg/l	4	2	<.01	5.30	0.77	0.67	0.56	0.60	0.60	0.59	
Silica	mg/l			29	76	53	40	38	34	34	35	
TDS (180 c)	mg/l		500	1,430	2,600	2,045	4,640	1,546	1,837	1,753	1,712	
EC (25 c)	µmho			2,620	4,320	3,519	6,020	2,543	2,738	2,647	2,643	
ALK as CaCO3	mg/l			24	229	177	356	198	203	186	196	
pH			6.5-8.5	7.19	8.39	7.0-8.0	7.00	7.26	7.20	7.19	7.22	
Arsenic *	mg/l	0.01		<.001	0.061	0.014	0.006	0.004	0.004	0.004	0.004	
Cadmium *	mg/l	0.005		<.0001	0.0053	0.0002	0.0004	0.002	0.003	0.002	0.002	
Iron	mg/l		0.3	<.01	0.090	0.020	0.020	0.023	0.044	0.016	0.027	
Lead *	mg/l	0.015		<.001	0.006	0.001	0.001	0.004	0.005	0.005	0.005	
Manganese	mg/l		0.05	<.01	0.14	0.03	0.75	0.24	0.17	0.14	0.18	
Mercury	mg/l	0.002		<.0001	0.0001	0.0001	<.0001	0.0001	0.0001	0.0001	0.0001	
Molybdenum	mg/l		1.0	<.01	0.64	0.06	2.90	0.14	0.13	0.15	0.14	
Selenium *	mg/l	0.05		<.001	0.045	0.006	0.041	0.034	0.037	0.031	0.034	
Uranium	µg/l	0.03		1.000	30.500	0.547	23.700	0.650	0.933	0.680	0.755	
Ammonia-N *	mg/l			<.01	0.56	0.08	<.01	0.13		0.13	0.13	
Radium 226	pCi/l	5.0		1.0	642.0	130.3	463.0	64.17	56.04	62.11	60.78	

COLOR CODE EXPLANATION	
	Below RT
	Below MCL
	No Standard
	Above RT & MCL